ISOLATION BAG

FIELD OF THE INVENTION

The present invention relates generally to medical devices utilized to isolate and treat intensive care patients outside of a medical facility, and more particularly, to a self-contained, transportable isolation bag utilized in the resuscitation, stabilization, and transport of medical patients that further facilitates the removal of toxic residues therefrom.

BACKGROUND OF THE INVENTION

Typically, when a person is injured and becomes a casualty in a contaminated environment, such as occurs in a chemical warfare confrontation, the casualty is placed within a litter bag or other type of enclosure for transportation to a medical facility. Ideally, the enclosure is manufactured of a material that inhibits or prevents the transfer of contaminants from the ambient environment to the casualty.

In many cases, it is imperative that medical treatment be given to the casualty immediately. However, in order to administer treatment, the casualty must first be isolated and transported into an enclosure within which medical personnel may work on the casualty or additional means must be provided for allowing access to the casualty without introducing contaminants into the enclosure containing the casualty. In this regard, it is desirable to isolate the patient from the environment when the environment contains substances which may be detrimental to the medical patient. For example, if the patient has suffered severe blood loss or is experiencing difficulty breathing, then it is desirable to prevent the patient from breathing dust, engine exhaust, smoke, etc. It is also desirable to isolate the medical patient from the environment when bacteriological, chemical and/or radiological hazards are present, as may occur during battlefield conditions.

In addition, it would be advantageous if such isolated environment were caused to facilitate the removal of such toxic and infectious residues that may be present on the clothing and/or skin of such isolated medical patient to thus enable the patient to become further stabilized during transit to a suitable medical facility. Ideally, the isolated medical patient would be contained within an environment that is provided with air that is constantly recycled, decontaminated and refreshed such that such toxic and infectious residues are rapidly removed from the isolated medical patient.

Unfortunately, prior art apparatuses currently available for treating the casualty in the field are generally ineffective in providing an environment conducive to the administration of medical treatment, and can thus cause treatment to be delayed until the casualty is transported to an adequate medical facility, which is frequently not readily accessible. Such prior art apparatuses are further generally deficient in providing an environment where the casualty is protected from contaminants, let alone actually facilitate the removal of contaminants already present on the skin and/or clothes of the casualty.

As such, there is a need in the art for an isolation system, and in particular an isolation bag within which a medical patient is placed at the battlefield and within which the medical patient remains until a suitable medical facility can be accessed. It is further desirable to provide an isolation system having an isolation bag wherein the latter can protect a medical patient contained therewithin from an contaminated external environment such that the condition of such patient is not made worse by the ingress of poisonous

substances resulting from chemical and/or biological attack, as well as other harsh and extreme weather conditions arising from rain, wind, dust, hot, cold, wet and dry climatic conditions. There is still further a need for an isolation bag as part of an isolation system that is capable of delivering a constant supply of air to a patient contained therewithin wherein such air is constantly recycled, decontaminated and refreshed and that is further capable of delivering such air in a manner such that toxic and infectious residues present upon the patient may be rapidly removed, filtered and decontaminated. There is additionally a need for such an isolation bag that, as part of a medical patient isolation system, is specifically designed and configured to occupy a small space and can be easily transported when collapsed, but may be rapidly and easily expanded for use.

SUMMARY OF THE INVENTION

The present invention specifically addresses and alleviates the above-mentioned deficiencies associated with the prior art. More particularly, the present invention comprises an isolation bag for use with a transportable litter having a self-contained life support system integrated therein for protecting a casualty or medical patient from an external contaminated environment. The isolation bag is further capable of delivering a constant supply of recycled, decontaminated and refreshed air that facilitates the removal of toxic infectious residues present upon the patient contained therein.

According to a preferred embodiment, the bag comprises a covering positionable about a casualty or medical patient when the latter assumes a supine position upon the litter with which the isolation bag is used. The isolation bag comprises the combination of a first lower bag portion and a second upper bag portion that are designed and configured to mate with one another and form an air-tight chamber within which a patient may be positioned. The entrance to such chamber is through a long zippered opening formed about the peripheral edges of the first and second bag portions that is specifically configured to form an anti-leak seal when closed. Formed about the upper bag portion are a series of tubular gas passages designed and configured to receive pressurized gas from an external source such that when the tubular gas passages are filled with a pressurized gas, the upper bag portion assumes a semi-rigid, parallel piped structure.

Formed upon the interior of such tubular passageways are a plurality of apertures oriented to deliver a constant stream of air to the patient contained therewithin. In a preferred embodiment, the plurality of apertures are so formed upon the tubular structures of the cover such that as air is delivered, it is washed over the patient in a head-to-toe direction such that rapid removal of toxic and infectious residues is facilitated. To facilitate the passage of air through the chamber in such a manner, there is formed upon one end of the bag an outlet or exhaust valve designed to draw air delivered into the bag out therefrom in a proximal to distal direction.

The isolation bag is preferably fabricated from chemical and/or biochemical resistive materials that are further capable of protecting a patient contained within the bag from harsh and extreme weather conditions arising from rain, wind, dust, hot, cold, wet and dry climatic conditions. The isolation bag is further preferably fabricated from a transparent material to enable the patient contained therewithin to be viewed by medical personnel, as well as to minimize patient claustrophobic experiences. To facilitate medical